

A, being connected through an inductance, g , to the other side of the spark gap. Mr. Marconi finds it essential that the inductance of the two conductors A and A' should be unequal, the larger inductance being preferably joined to the non-earthed conductor A. Such an arrangement proves both a persistent vibrator and a good radiator, thus enabling selective signalling to be easily carried on over considerable distances with quite short heights of cylinder. Very good results were obtained between the Isle of Wight and Poole, a distance of three miles, with cylinders 1.5 metres in diameter and only 7 metres high.

Another very good synchronised transmitting and receiving system which has been devised by Mr. Marconi is shown in Figs. 2 and 3.

In this the terminals of the spark gap, B, are connected to a closed circuit containing inductance and capacity; such a circuit is a very persistent oscillator, but a bad

syntony even although the same vertical wire be used for the different sets of signalling apparatus, which would be connected to it, in such a case, through inductances of different values.

A still further improvement is effected by combining the two methods described above; in this case the connections are made as shown in Fig. 4, which does not require any further explanation.

Mr. Marconi concluded his lecture with an account of some of the achievements already made with wireless telegraphy. The development has been so rapid under his able guidance that one feels that almost as one writes the systems being described are becoming out of date. Perhaps before long Mr. Marconi will have succeeded, by the use of suitable mirrors and lenses, in guiding the radiation in a definite direction, and thus

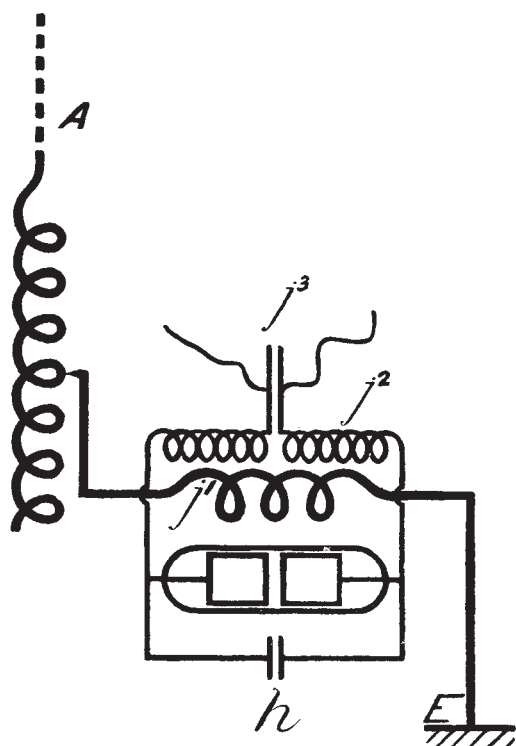


FIG. 3.

radiator and absorber. There is, therefore, combined with it a good radiating circuit, consisting of the vertical conductor, A, which is earthed through an adjustable inductance, d . The vibrations set up in the primary circuit connected to the spark gap induce oscillations in the radiating circuit, the mutual action being increased by winding a part of the radiating circuit around the primary circuit (at d'), as in a transformer. The two circuits are carefully tuned by adjusting either the capacity, e , or the inductance, d , or both. In the receiving apparatus (Fig. 3) the connections are similar; the aerial wire is connected to earth through an adjustable inductance, part of which, j^1 , is wound as the primary of a transformer of which the secondary, j^2 , is connected to the coherer; an adjustable capacity, h , is connected across the coherer in order to obtain better tuning. It will be seen that with this arrangement of transmitting and receiving stations there are four distinct circuits, two at each station, which have all to be in tune. Using this system Mr. Marconi has been able to attain very satisfactory

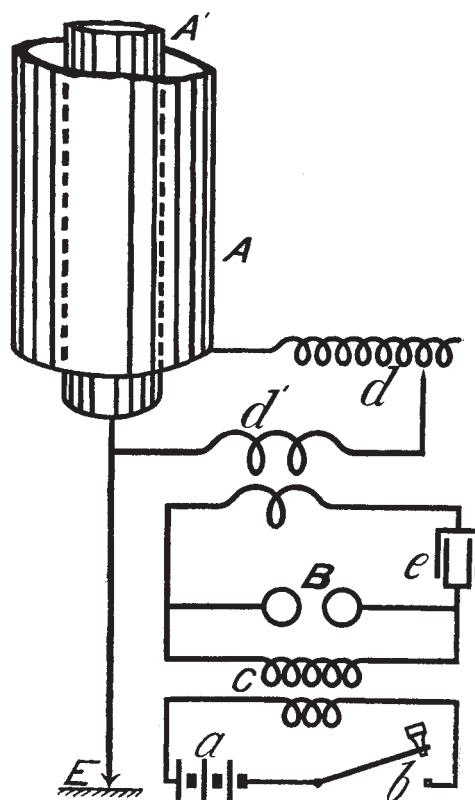


FIG. 4.

have effected a great gain in efficiency. But whether this should prove practicable or not, Mr. Marconi is to be congratulated on the brilliant success of his efforts, and deserves the gratitude of all for having worked out so admirable a system for increasing the safety and convenience of those "that go down to the sea in ships, that do business in great waters."

THE ANTARCTIC EXPEDITION.

TO our great regret the officers of the Royal Society have not yet, so far as we know, made any statement regarding the hopeless condition of affairs which has arisen in relation to the Antarctic Expedition in consequence of the recent action of the Council.

It will be of interest to our readers to observe, in the paragraph we quote below, from *Science* of May 24, the manner in which the management of the Antarctic Expedition is regarded by the scientific men of another

nation. The writer has made a natural mistake in supposing that the expedition is under naval control and will sail under naval discipline. This of course is erroneous. The Admiralty has no responsibility and the expedition must be regarded as a private venture. As it stands at present, the expedition is to leave our shores without a man on board who has had any experience in the conduct of a scientific expedition of any importance; and without a commander who has had any experience in the control of a ship. Can the Royal Society bear the onus of responsibility which such a so-called "scientific" expedition will entail upon them?

"Dr. J. W. Gregory, who was appointed scientific leader of the British Antarctic Expedition and as such recently contributed to NATURE a plan of the scientific work, has now stated that he cannot accept service under the regulations laid down. This resignation, for so it has been regarded by the committee, is a very severe blow to the prospects of the expedition, or at least to the scientific results that might have been expected. Some, perhaps, prophesied failure when they saw the attempt that was made from the first to place the expedition under Admiralty control and naval discipline. Friction and consequent heat became inevitable when the committee proceeded to appoint two leaders—a naval and a scientific—without defining their powers from the outset. It is well known that the meetings of this committee have been a series of fights between the geographers and naval men as opposed to the purely scientific men; and Dr. Gregory has over and over again been on the point of resigning. We understand that the ultimate dispute was over the question of landing, which Dr. Gregory wished to have fixed as a main object of the expedition, and not left entirely to the discretion of an unscientific commander. But the actual cause of rupture is immaterial. The position, thanks to the naval manoeuvres, has always been an impossible one for the scientific men. While Dr. Gregory's absence in Australia has placed him at a disadvantage, Sir Clements Markham may be congratulated; but the committee will have a difficulty in finding a head for the scientific staff with half the competence of Dr. Gregory."

NOTES.

CAPTAIN E. W. CREAK, F.R.S., has been created a Companion of the Order of the Bath "in recognition of his services while holding the appointment of Superintendent of Compasses in the Hydrographic Department of the Admiralty."

THE Bakerian Lecture of the Royal Society will be given by Prof. J. Dewar, on Thursday next, June 13. The subject will be "The Nadir of Temperature, and allied Problems."

WE regret to see the announcement of the death of Prof. J. Viriamu Jones, F.R.S., principal and professor of physics in the University College of South Wales and Monmouthshire. Prof. Jones was only forty-five years of age.

THE subjects of two of the evening discourses to be delivered during the forthcoming meeting of the British Association at Glasgow have been decided. Prof. W. Ramsay will lecture on "The Inert Constituents of the Atmosphere" on Friday, September 13, and Mr. Francis Darwin will lecture on "The Movements of Plants" on Monday, September 16. As already announced, the lecture to workmen on Saturday, September 14, will be delivered by Mr. H. J. Mackinder.

AN International Congress of Historical Science will be held at Rome in April of next year. There will be a section for the history of science, including especially medical science, and all who are interested in this or other sections of the work of the Congress are invited to communicate with Prof. P. Giacosa, Istituto di Materia Medica, Corso Raffaello 30, Turin.

PROF. WILLIAM GALLOWAY, professor of mining at the University College of South Wales, at Cardiff, has been appointed to investigate on behalf of the Government the cause of the Senghenydd explosion. Prof. Galloway has stated to a

correspondent that it was unquestionably a coal-dust explosion, but more he could not say at present. As to the scope of the inquiry, he said specific points had been suggested by the Home Secretary, and the object of the scientific investigation would be to devise means to prevent a recurrence of the accident.

LORD GEORGE HAMILTON has written to Sir Alfred Hickman, M.P., ex-president of the British Iron Trade Association, explaining why certain contracts were placed by Indian railway companies with American firms. In the course of his remarks he says:—"You seem to think that orders have only gone abroad because those who gave them did not understand their business. I wish that it were so. The competition we have to face is founded on something much more formidable and substantial. Chemical research, concentration of capital, thorough technical education, improved industrial organisation have made in recent years greater advance in America than here; it is with the product of these combinations and not with the assumed stupidity of Indian officials that the British engineer has to contend." Sir Alfred Hickman replies in a long letter, which appeared in Tuesday's *Times*, but his remarks refer more to alleged imperfections in American work and the value of protection than to the cause of competition. He asks what evidence exists of "superior chemical research, technical education, &c.," and says, "I deny the 'chemical research'" mentioned by Lord George Hamilton. Apparently Sir Alfred Hickman attaches no importance to such reports as those prepared for the University of Birmingham and the Manchester Technical Education Committee as to the position of technical education in the United States; and he can scarcely be familiar with American scientific and technical publications or he would not "deny the chemical research" with so free a mind. It seems pretty clear, however, that the India Office official who wrote Lord George Hamilton's letter to Sir Alfred Hickman was not the one who expressed views about the chemistry at Coopers Hill and aided the efforts which have strangled the technical education of the officers of the Indian Public Works Department.

THE annual meeting of the Victoria Institute will be held on Monday next, June 10. Sir Robert Ball, F.R.S., will deliver an address.

THE Melbourne correspondent of the *Times* states that Prof. Baldwin Spencer's ethnological expedition, which has arrived at Alice Springs, 1000 miles south of Port Darwin, has obtained valuable photographs of the native war and other dances and sacred ceremonies.

SOLITARY specimens of the Hoopoe are not unfrequently seen on Lundy Island in the spring. A correspondent asks whether any reader of NATURE can explain their appearance or give any information about their nearest abiding place.

WE learn from *Science* that at the recent annual meeting of the American Academy of Arts and Sciences it was unanimously voted to award the Rumford medal to Prof. Elihu Thomson "for his inventions in electric welding and lighting." The Academy has granted to Prof. Theodore W. Richards, of Harvard University, the sum of 500 dollars from the income of the Rumford fund in aid of a research upon the Thomson-Joule effect.

At the annual meeting of the Institution of Electrical Engineers on Thursday last, it was announced that the council had awarded the following premiums, among others, for papers and communications:—The Institution premium, value 25*l.*, to Mr. M. O'Gorman for his paper entitled "Insulation on Cables"; the Paris Electrical Exhibition premium, value 10*l.*, to Mr. W. Duddell for his paper entitled "On Rapid Variations of the Current through the Direct-Current Arc"; the Fahie premium,